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Fetlock lameness in sports horses: what is new?

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Incomplete sagittal fractures of the dorsoproximal aspect of the proximal phalanx have been well-documented in Thoroughbred racehorses and have also been described in sports horses. The purpose of this study is to describe the history, signalment, clinical signs and diagnostic imaging findings in lame sports horses with evidence of subchondral bone trauma of the proximal phalanx examined at the Animal Health Trust between January 2001 and December 2010.

Incomplete sagittal fractures and other subchondral bone injury of the sagittal groove of the proximal phalanx, confirmed using MRI, n=8

History and signalment
There were 8 horses (5 Warmbloods, 2 Arabians and 1 pony), with an age range of 7-14 years (median 11 years), used for dressage (4), showjumping (2) and endurance (2). Height ranged from 145 – 173 cm (mean 157 cm, median 151 cm) and bodyweight from 373 – 632 kg (mean 507 kg, median 491 kg). Four horses had unilateral forelimb lameness, 1 had unilateral hindlimb lameness and 3 horses had bilateral forelimb lameness (only evident after diagnostic analgesia of the lamer limb). Three horses had been lame for < 1 month, 2 for between 1 and 2 months, and 3 horses had shown intermittent lameness for 3 to 6 months. Two horses had shown sporadic, severe lameness if worked hard and 1 horse showed lameness that deteriorated with work.

Clinical features and response to diagnostic analgesia
Six horses had no localising clinical features; one had reduced fetlock flexion and one had bilateral fetlock effusion. The degree of lameness in hand in straight lines ranged from 1 to 5 (0=sound; 2=mild; 4=moderate; 6=severe; 8=non-weightbearing). Distal limb flexion tests were negative. Perineural analgesia of the palmar digital nerves was negative in all horses (n=5), including 1 which showed more severe lameness. Palmar nerve blocks (at the base of the proximal sesamoid bones [PSBs]) resolved lameness, or resulted in contralateral limb lameness in 5 of 6 horses. Lameness in 1 horse remained unchanged and was improved by palmar (at the junction of the proximal three-quarters and distal one-quarter of the metacarpal region) and palmar metacarpal nerve blocks. Intra-articular analgesia of the metacarpophalangeal joint improved lameness in 2 of 2 horses. Local analgesia was not performed in 1 horse.

Radiology
A very short vertical radiolucent line in the subchondral bone of the sagittal groove of the proximal aspect of the proximal phalanx was identified in the lame limb of 2 horses (1 bilaterally). In 5 horses there was a similarly positioned subtle, ill-defined radiolucent area, with thickening of the subchondral bone plate ± endosteal irregularity in 4 of these horses. One horse had an ill-defined curved obliquely orientated radiolucent line crossing the subchondral bone plate into the trabecular bone. No other significant radiological abnormality was detected.
Scintigraphy
There was intense increased radiopharmaceutical uptake (IRU) in the proximal axial aspect of the proximal phalanx in the lame(r) limb in 3 horses. There was moderate IRU in the proximal aspect of the proximal phalanx in the lame limb of 2 horses, in one of which there was more intense IRU in the distal axial aspect of the third metacarpal bone. There was also moderate IRU in the proximal axial aspect of the proximal phalanx in the less lame limb of one bilaterally lame horse. In the contralateral limb of this horse there was mild IRU. In 5 horses the region of IRU extended from the dorsal to the palmar aspects of the proximal phalanx, but was slightly greater dorsally than towards the palmar aspect. In 1 horse the areas of IRU were more centrally located from dorsal to palmar.

Magnetic resonance imaging
All horses had abnormalities localised to the sagittal groove in the proximal aspect of the proximal phalanx, with alterations in signal intensity in all image sequences. In 4 horses there were also abnormalities of the distal dorsal aspect of the sagittal ridge of the third metacarpal bone with reduced signal intensity in T1 and T2 weighted images and increased signal intensity in STIR images. In 2 horses there were areas of low signal intensity in T1 and T2 weighted images consistent with mineralisation in the palmar aspect of the condyles of the third metacarpal bone. In 4 horses a discrete fissure through the subchondral bone in the proximal aspect of the proximal phalanx could be identified, midway between the dorsal and palmar aspects in horses. In 1 horse a fissure was located closer to the dorsal cortex. The fissures were characterised by linear increased signal intensity in the subchondral bone in T1 and T2 weighted images.

Subchondral bone injury of the sagittal groove of the proximal phalanx, identified only by scintigraphy, n=8
During the study period an additional 8 horses were examined with similar clinical features that did not undergo MRI because of financial constraints. All had focal moderate or intense IRU in the proximal axial aspect of the proximal phalanx, extending from dorsal to palmar.

Subchondral bone injury of the medial condyle of the proximal phalanx, n=5
Three horses had moderate forelimb lameness associated with distension of the fetlock joint capsule and pain on passive flexion. Lameness was substantially by intra-articular analgesia. A linear fissure or an ill-defined radiolucent area in the subchondral bone was identified radiologically.

Two horses had moderate forelimb and hindlimb lameness respectively and no localising clinical signs. Lameness was abolished by palmar nerve blocks (at the base of the PSBs) in 1 horse with forelimb lameness. There was increased thickness of the subchondral bone plate identified radiologically, associated with focal intense IRU in the proximomedial aspect of the proximal phalanx extending from dorsal to palmar. MRI revealed abnormal signal intensity in the proximomedial aspect of the proximal phalanx and the opposing aspect of the third metacarpal bone consistent with abnormal mineralisation and bone trauma. In a horse with hindlimb lameness plantar and plantar metatarsal nerve blocks were required to resolve the lameness. No abnormality was detected radiologically or scintigraphically. MRI revealed similar abnormalities.

We believe that the majority of these injuries of the SCB are likely to be the result of chronic repetitive trauma rather than single episode events. Their location is consistent with regions of maximum loading in the fetlock joint.

Fetlock region should be considered in horses with lameness abolished by palmar nerve blocks at the base of the PSBs. Subtle radiological abnormalities may herald more serious injury meriting further investigation using scintigraphy and/ or MRI.